8-6

Field Inspection Reports:

Review Prestressed Concrete

Objective

Processing Prestressed Concrete Field Inspection Reports

Create a New Prestressed Concrete FIR

Overview

The acceptance of Prestressed Concrete units are based on the following:

- tests of materials
- compression tests on concrete cylinders
- inspection of the finished units

The inspector will have the authority to reject any or all units not manufactured in accordance with the above specifications. Any unit found to be defective in any manner may be rejected and replaced by an acceptable unit or repaired in a manner approved by the Engineer.

Step 1: Choose **Field Inspection Reports** from the **Functions** menu.

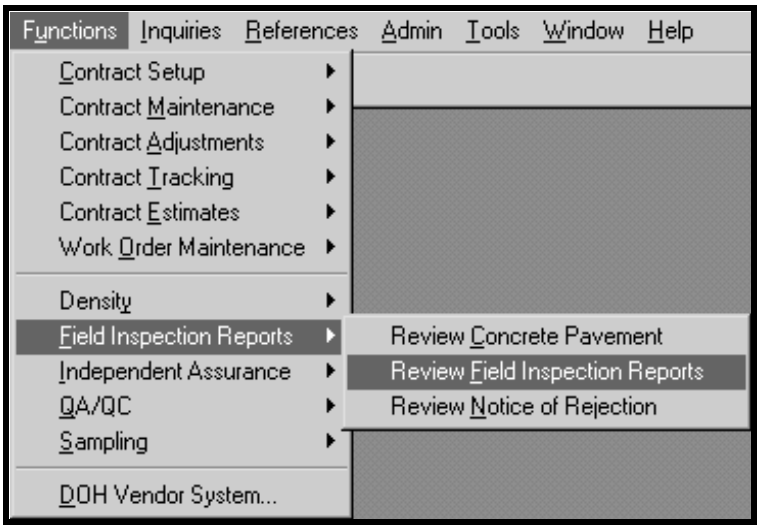

Figure 1 - Access to Review Field Inspection Reports

Step 2: To access a NEW Prestressed Concrete Report, click the *Report Name* field and select *Prestressed Concrete*.

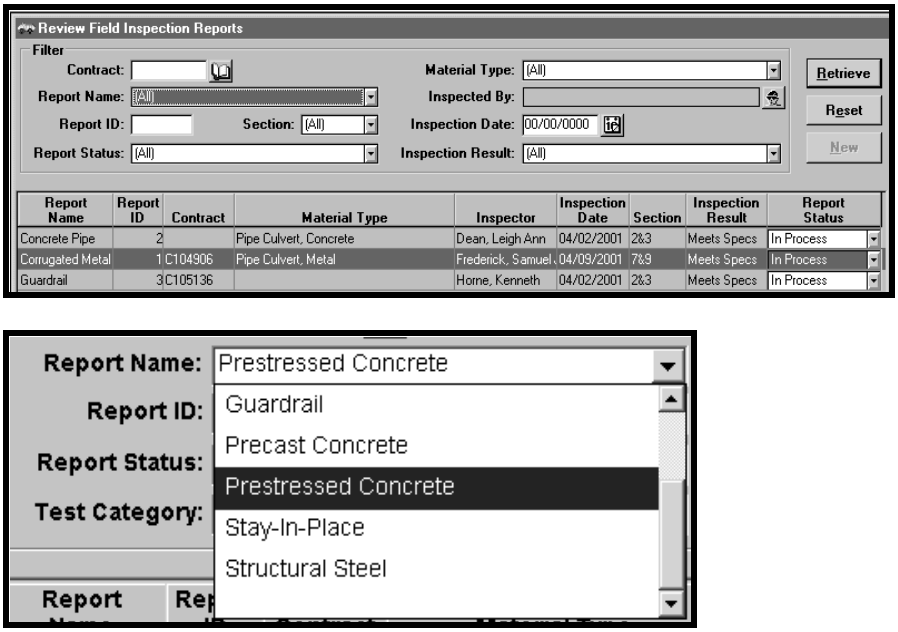

Figure 2 - Access to a NEW Prestressed Concrete Report

Step 3: Click the **New** button and the General tab for Prestressed Concrete is displayed:

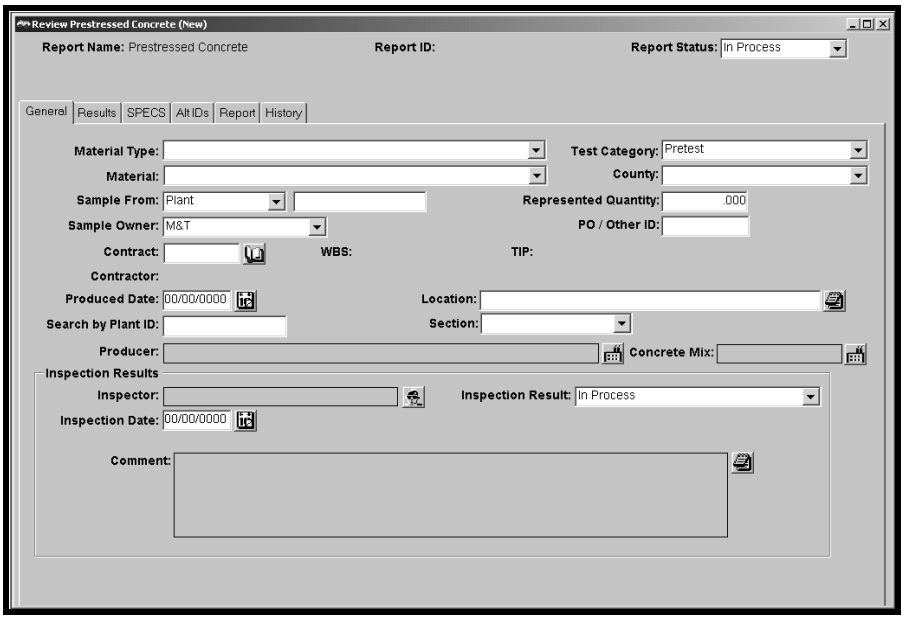

Figure 3 - New Review Prestressed Concrete Window

General Tab

The **General Tab** allows entry of the following information:

- *Sample From* - The Sample From category for Prestressed Concrete reports is required and will default to "Plant" on the window. (Required field)
- *Test Category* - The Testing Category for all Prestressed Concrete reports is required and defaults to "Pretest" on the window. (Required field)
- *Contract* number - if applicable
- *Material & Material Type* - The material and material type being inspected.
- Other general test information

The *minimum* requirements to save a *Prestressed Concrete* record are the following fields. (This message is displayed when attempting to save the record without entering these fields.)

Figure 4 - Advisory Message, Required Information

Note: *If the contract number is changed after the original report is saved, the following message will appear:*

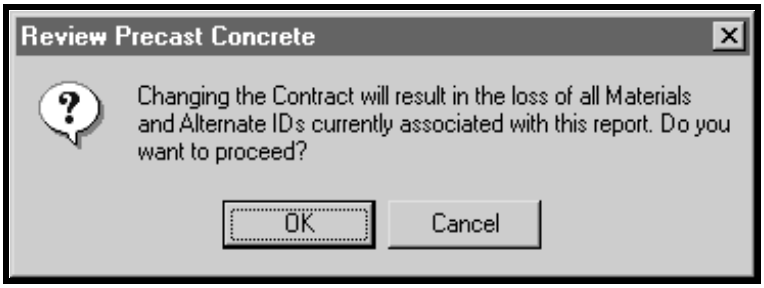

Figure 5 - Advisory Message

Note: *If the bill of materials for the entered/selected contract number does not contain a material that requires prestressed concrete field inspections, the following message will appear:*

Figure 6 - Advisory Message

Step 4: To select the **Material Type**, click the *Material Type* field and all applicable selections are displayed. Click the desired Material Type from the drop-down menu choices.

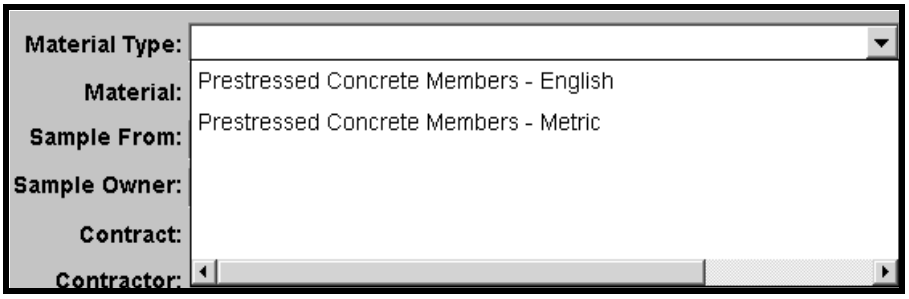

Figure 7 – Material Type dropdown list

Note: *The items displayed will vary depending upon the contract number. If no Contract number has been entered, all the material types requiring Prestressed Field Inspection in the MSG will appear here. If a contract has been entered, the Material and Material Type must be associated to the contract via the CBOM window.*

Step 5: To select the **Material**, click the *Material* field and all applicable selections are displayed. Click the desired Material from the list of all materials associated to the selected material type.

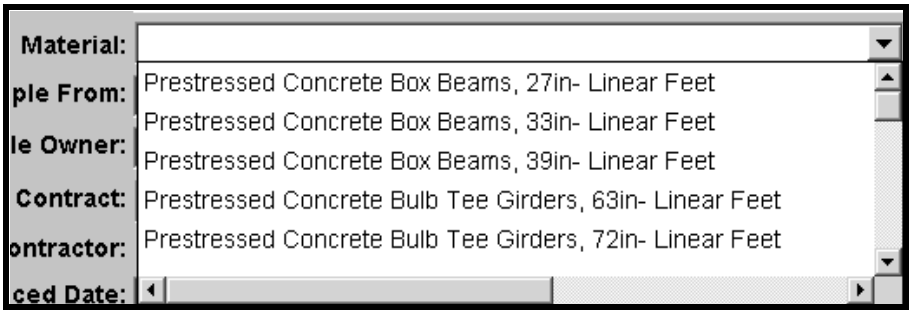

Figure 8 – Material dropdown list

Step 6: To select the **Sample From** location, click the field and all applicable selections will be displayed. For Prestressed Concrete FIRs, the Sample From field will default to 'Plant'.

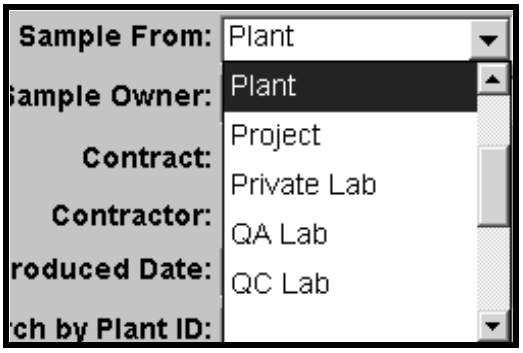

Figure 9 – Sample From dropdown list

Step 7: To select the **Sample Owner**, click the field and all applicable selections will be displayed. For Prestressed Concrete FIRs, the Sample Owner field will default to 'M&T'.

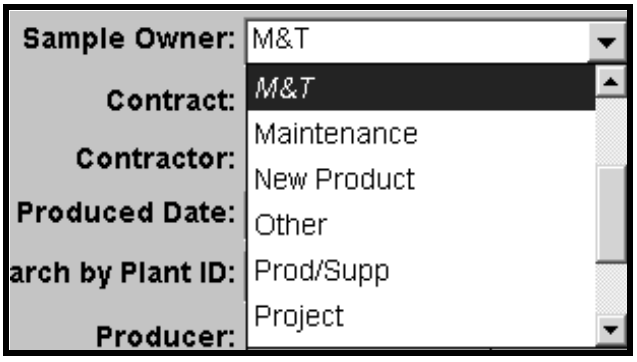

Figure 10 – Sample From dropdown list

Step 8: To select a **Contract Number**, enter the contract number or click the book icon to select from a list. When the Contract Number book icon is clicked, the following selection window will appear.

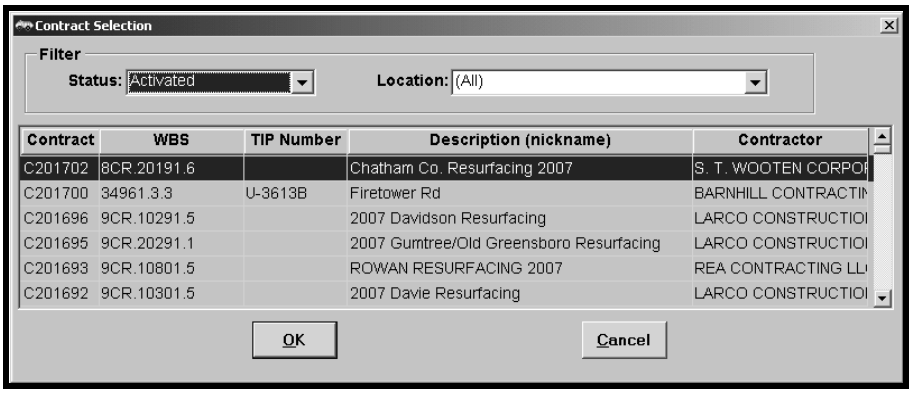

Figure 11 – Contract Number selection window

By default, the filters will be set to retrieve all Activated contracts.

Step 9: Double click the contract or single click the contract and then click **OK**. The selected contract will be inserted in the Contract Number field.

Note: *Entry/selection of a valid Contract number automatically enters the primary WBS, the primary TIP, and the Contractor that is associated with the Contract number. See example below:*

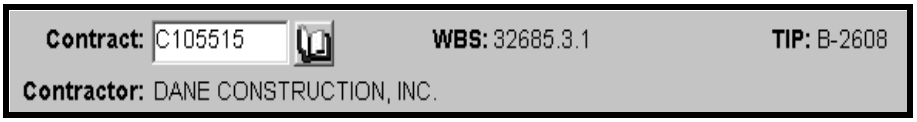

Figure 12 - Contract Number, Default Fields

Step 10: To select the **Date Produced**, enter a date or click the calendar icon to use the **Calendar** tool. Double-click desired date.

Figure 13 - Calendar Tool

Step 11: To select an approved Producer, enter the Facility ID in the **Search by Plant ID** field, or click the factory icon next to the **Producer** field to use the Producer/Supplier selection window. When the factory icon is clicked, the following window will appear.

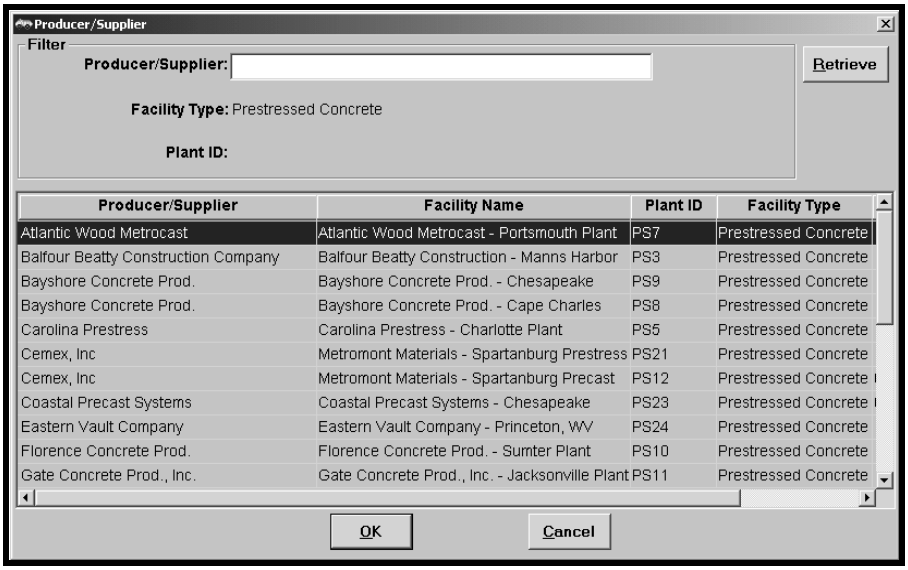

Figure 14 – Producer/Supplier selection window

Scroll to the desired Producer and double click the producer name or single click the producer name and then click **OK**. The selected Producer name will be inserted into the **Producer** field.

Step 12: To select the mix design, click the factory icon next to the Concrete Mix field and choose the appropriate mix. When the factory icon is clicked, the following selection window will appear.

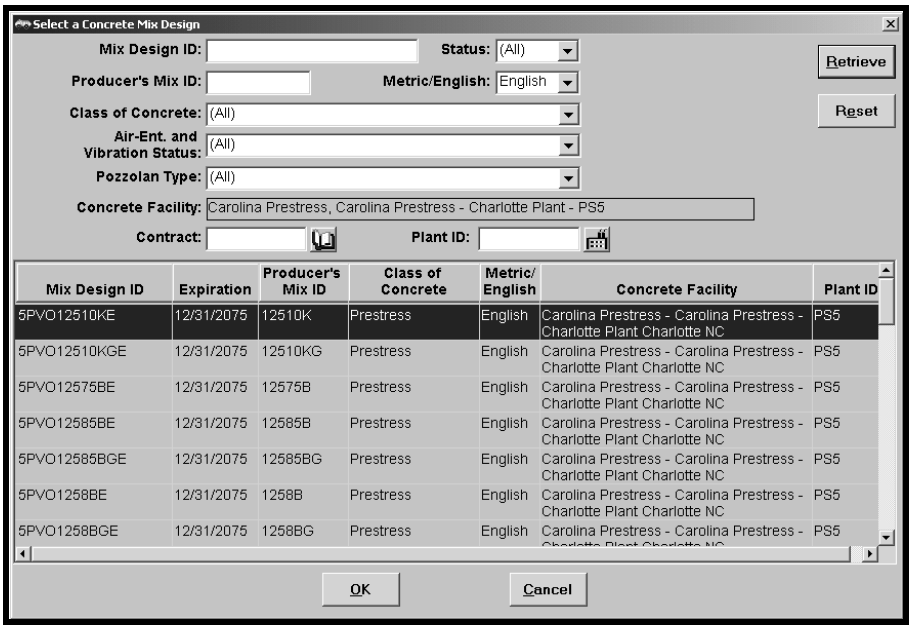

Figure 15 - Concrete Mix Design selection window

Note: *Only mix designs associated with the selected Producer will be available for selection. If a Contract Number was specified, the list will be further limited to only those mix designs assigned to the selected contract.*

In the event that the selected Producer and / or Contract have no valid mix designs available for selection, the following message will be displayed:

Figure 16 - Advisory Message

Step 13: To retrieve by *Class of Concrete*, click the drop-down menu, select from the list, and then click the **Retrieve** button. This will produce a list based upon concrete class:

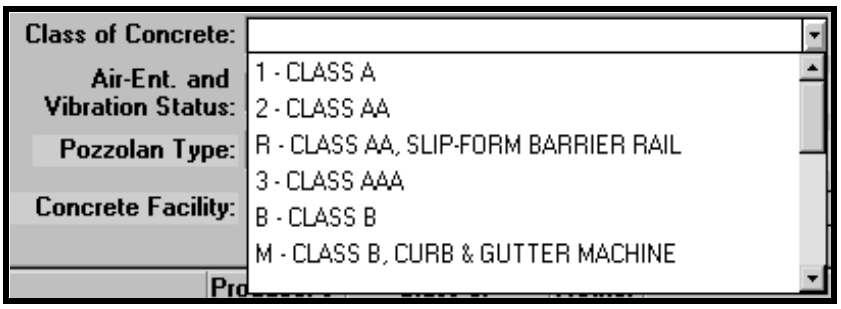

Figure 17 - Class of Concrete Drop-Down Menu

Step 14: To retrieve by *Air-Ent. and Vibration Status*, click the drop-down menu, select from the list, and then click the **Retrieve** button. This will produce a list based upon this status:

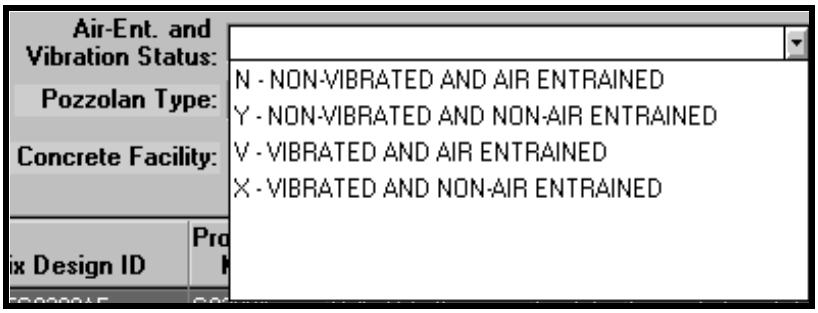

Figure 18 - Air-Entrained and Vibration Status Drop-Down Menu

Step 15: To retrieve by *Pozzolan Type*, click the drop-down menu, select from the list, and then click the **Retrieve** button. This will produce a list based upon Type of Pozzolan:

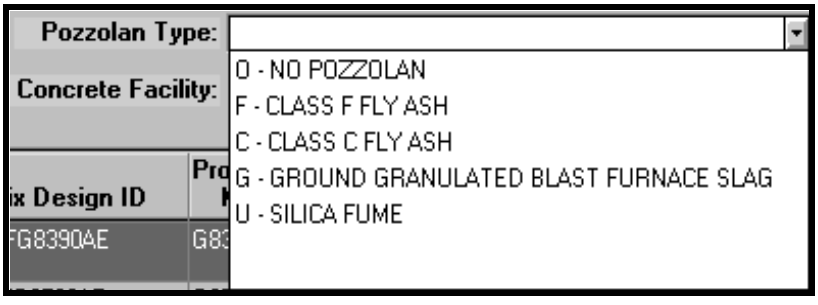

Figure 19 - Pozzolan Type Drop-Down Menu

Note: *Individual criteria choices alone or a combination of choices will produce lists based upon those choices. See populated example below:*

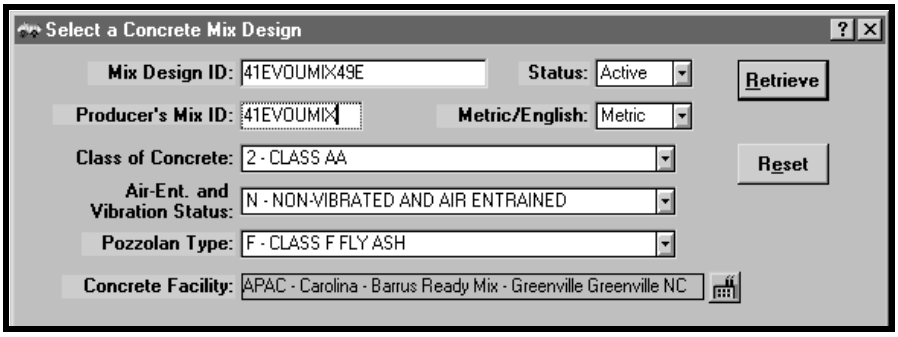

Figure 20 - Populated Concrete Mix Design selection window example

Step 16: Double click the desired mix design or single click the mix design and then click **OK**. The selected mix design ID will be entered in the **Concrete Mix** field.

Step 17: To select a **Test Category** click the field and all applicable selections will be displayed. For Prestressed Concrete Field Inspections, the Test Category will default to 'Pretest'.

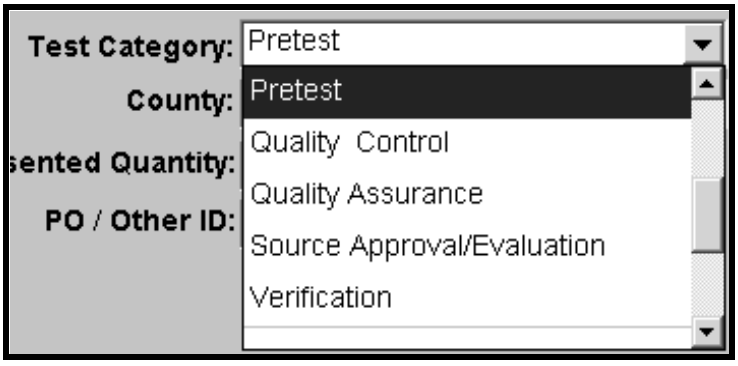

Figure 21 – Test Category dropdown list

Step 18: To select a **County**, click the field and all applicable counties will be displayed.

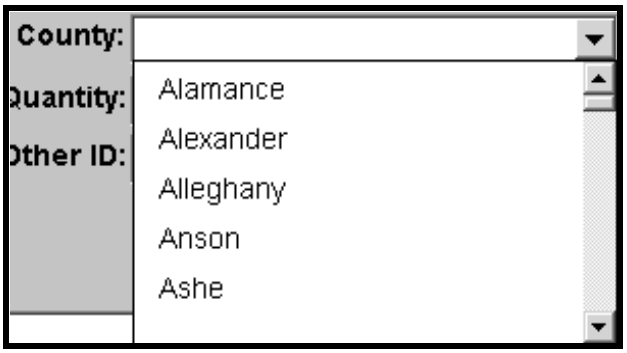

Figure 22 – County dropdown list

Step 19: Enter the quantity of material represented by this Field Inspection report in the **Represented Quantity** field.

Step 20: If applicable, enter a PO or other reference number in the **PO/Other ID** field.

Step 21: If applicable, enter the location on the roadway where the material was placed in the **Location** field.

Step 22: If applicable, select the **Section** where the contract is being administered. To select a section, click in the field and all applicable Sections will be displayed.

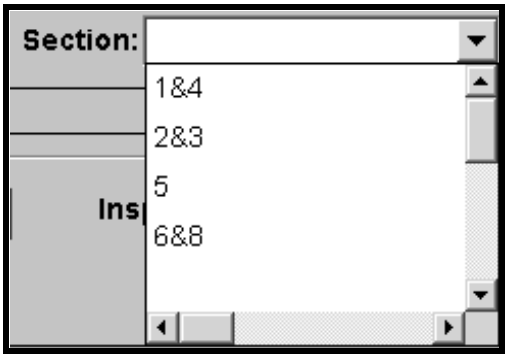

Figure 23 – Section dropdown list

Step 23: To select an inspector, click the worker icon  . When the worker icon is clicked, the following staff selection window appears.

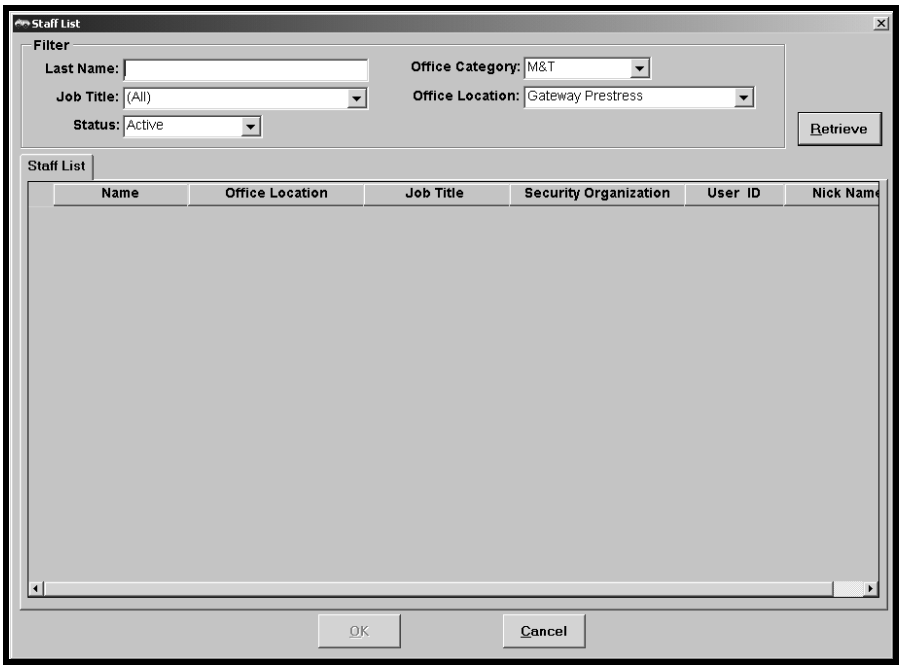

Figure 24 – Staff selection window

Note: *By default, the staff selection filters will be set to equal the Office Category and Office Location of the user logged in.*

Step 24: Change the staff selection filters, if necessary, and click **Retrieve**. A list of staff members matching the selected filter criteria will be displayed. Double click the appropriate staff member or single click the staff member and then click **OK**. The selected staff member name will be entered in the **Inspector** field.

Step 25: To select an **Inspection Date**, enter a date or click the calendar icon and use the calendar tool.

Note: *The Inspection Date must be greater than or equal to the Date Produced.*

Step 26: To enter comments regarding the inspection click the notebook icon  and the comment box will appear.

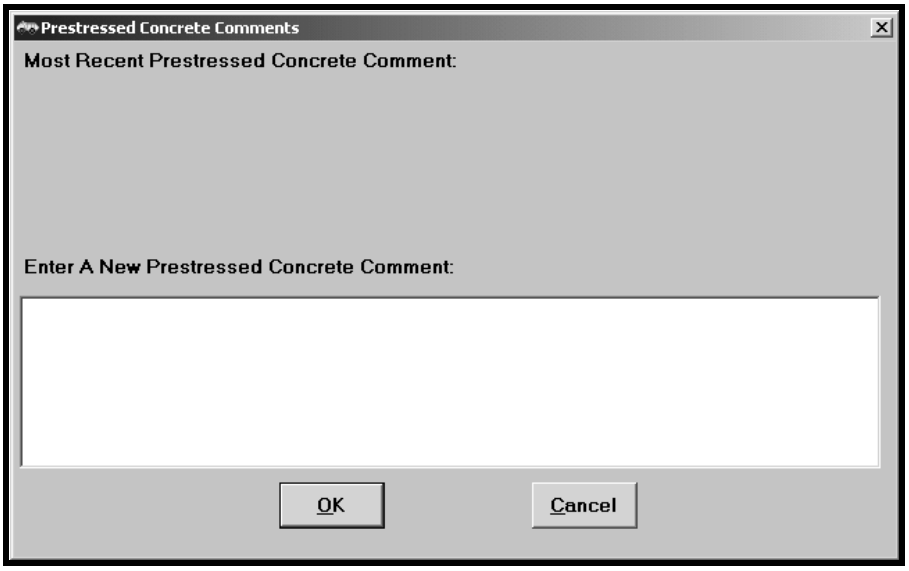

Figure 25 – Comment entry window

Note: *Each time a new comment is entered, the previous comment will be displayed for reference in the upper portion of the comment entry window.*

Following is an example of a field inspection report with the "General" information completed:

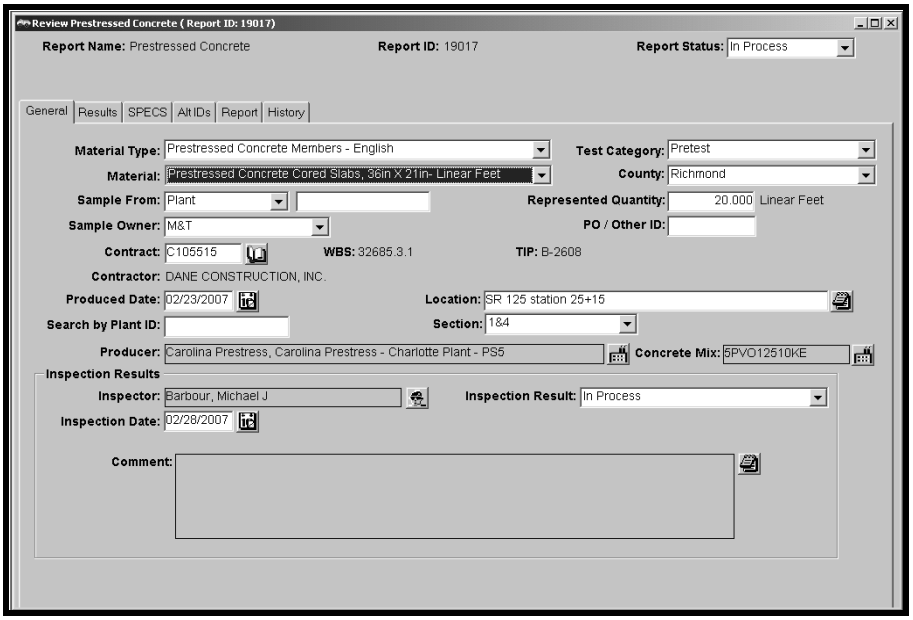

Figure 26 – Completed Prestressed Concrete General Tab

If necessary, the report can now be saved and test results entered at a later date.

Results Tab

Step 27: Continue entering your Field Inspection Report by clicking on the Results tab. The following tabpage is displayed.

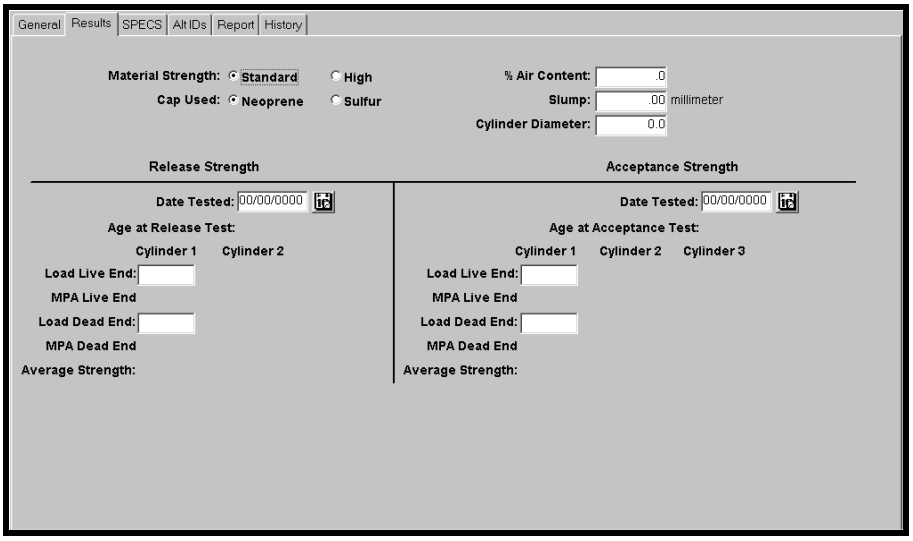

Figure 27 - Prestressed Concrete Results Tab

Step 28: Select the strength of the material being inspected by clicking one of the **Material Strength** radio buttons. The Standard strength radio button will be selected by default.

Note: *When the High strength radio button is selected, the bottom portion of the window will be updated to include additional cylinder fields as in the example below.*

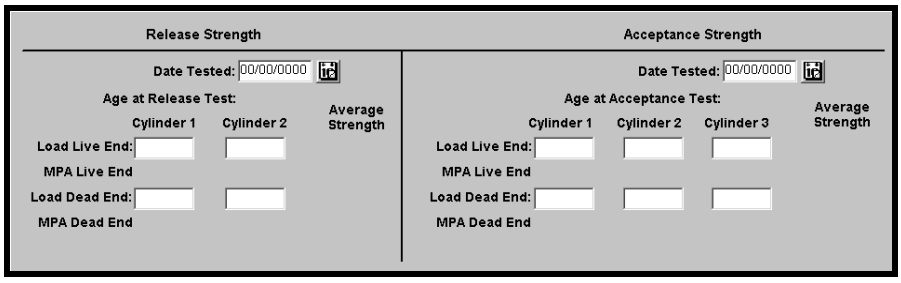

Figure 28 – Additional high strength test result fields

Step 29: Select the type of cap used by clicking one of the **Cap Used** radio buttons. The Neoprene radio button will be selected by default.

Step 30: Enter the percentage of air content in the **% Air Content** field.

Step 31: Enter the slump in the **Slump** field.

Note: *If the material being inspected is measured in English units, slump should be entered in inches. If the material is measured in Metric units, slump should be entered in millimeters.*

Step 32: Enter the diameter of the cylinder being inspected in the **Cylinder Diameter** field.

Note: *If the material being inspected is measured in English units, valid cylinder diameters will include 4.0 and 6.0. If the material is measured in Metric units, valid cylinder diameters will include 101.6 and 152.4.*

Step 33: To enter the date that Release Strength tests were performed, click in the **Release Strength Date Tested** field and type a date or click the calendar icon and use the calendar tool.

Note: *The Release Strength Test Date must be greater than or equal to the Inspection Date entered on the General tab. When a valid test date is entered, the **Age at Release Test** will be calculated and displayed as in the example below.*

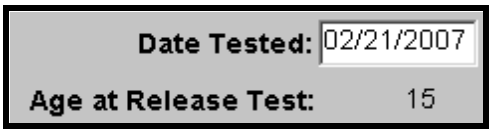

Figure 29 – Age at Release Test calculated value

Step 34: Enter the release load applied to the first cylinder taken from the live end of the bed in the **Cylinder 1 Load Live End** field.

Step 35: Enter the release load applied to the first cylinder taken from the dead end of the bed in the **Cylinder 1 Load Dead End** field.

The strength of each cylinder will be calculated and displayed in the **PSI Live End** and **PSI Dead End** fields as show below.

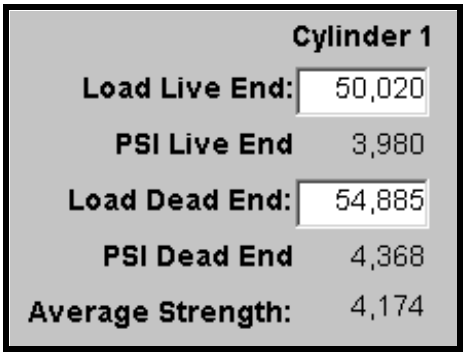

Figure 30 – Calculated strength values

Note: *If the material being inspected is of standard strength, the average strength of the live end and dead end cylinders will be calculated and displayed as shown above.*

Note: *If the material being inspected is measured in English units, strength values will be calculated and displayed in Pounds Per Square Inch (PSI). If the material being inspected is measured in Metric units, strength values will be calculated and displayed in Megapascals (MPa).*

Step 36: If the material being inspected is of high strength, enter the release load applied to the second cylinder taken from both the live end and the dead end of the bed in the **Cylinder 2 Load Live End** and **Load Dead End** fields as shown below.

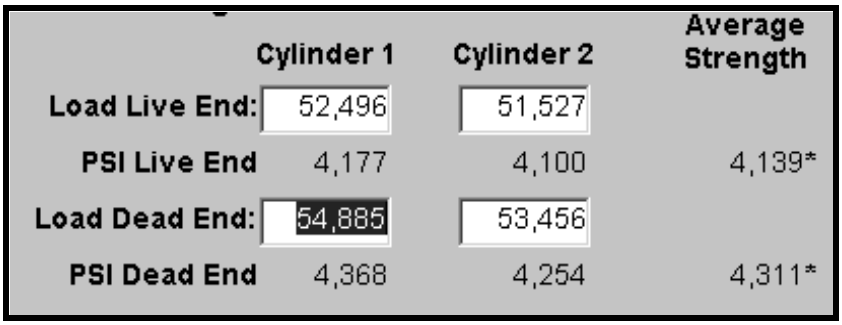

Figure 31 – High strength load and strength values

Note: *If the material being inspected is of high strength, the average strength of the cylinders from each end of the bed will be calculated and displayed.*

Step 37: To enter the date that Acceptance Strength tests were performed, click in the **Acceptance Strength Date Tested** field and type a date or click the calendar icon and use the calendar tool.

Note: *The Acceptance Strength Test Date must be greater than the Release Strength Test Date. When a valid test date is entered, the **Age at Release Test** will be calculated and displayed as in the example below.*

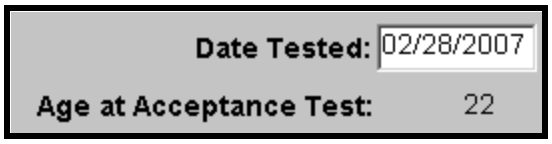

Figure 32 – Age at Acceptance Test calculated value

Step 38: Enter the acceptance load applied to the first cylinder taken from the live end of the bed in the **Cylinder 1 Load Live End** field.

Step 39: Enter the acceptance load applied to the first cylinder taken from the dead end of the bed in the **Cylinder 1 Load Dead End** field.

The strength of each cylinder will be calculated and displayed in the **PSI Live End** and **PSI Dead End** fields as show below.

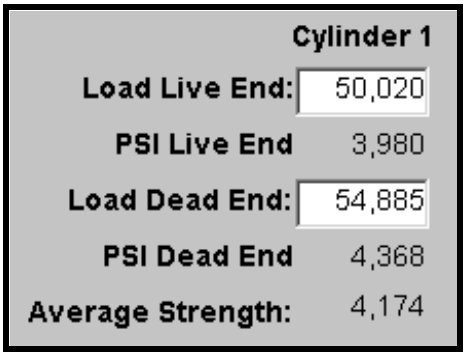

Figure 33 – Calculated strength values

Note: *If the material being inspected is of standard strength, the average strength of the live end and dead end cylinders will be calculated and displayed as shown above.*

Note: *If the material being inspected is measured in English units, strength values will be calculated and displayed in Pounds Per Square Inch (PSI). If the material being inspected is measured in Metric units, strength values will be calculated and displayed in Megapascals (MPa).*

Step 40: If the material being inspected is of high strength, enter the load applied to the second and third cylinders taken from

both the live end and the dead end of the bed in the **Cylinder 2** & **Cylinder 3 Load Live End** and **Load Dead End** fields as shown below.

Age at Acceptance Test:	22			
	Cylinder 1	**Cylinder 2**	**Cylinder 3**	**Average Strength**
Load Live End:	93,500	93,520	88,600	
PSI Live End	7,440	7,442	7,051	7,311
Load Dead End:	89,560	90,500	91,450	
PSI Dead End	7,127	7,202	7,277	7,202

Figure 34 – High strength load and strength values

Note: *If the material being inspected is of high strength, the average strength of all three cylinders from each end of the bed will be calculated and displayed*

SPECS Tab

The specifications used to grade each test result will be displayed on the SPECS tab. Standard specifications will be displayed on the left under the heading *List of Standard Test Specifications for this Material*. Override specifications, if any exist, will be displayed on the right under the heading *List of Test Specifications for this FIR*. An example of the SPECS tab including only standard specifications is shown below.

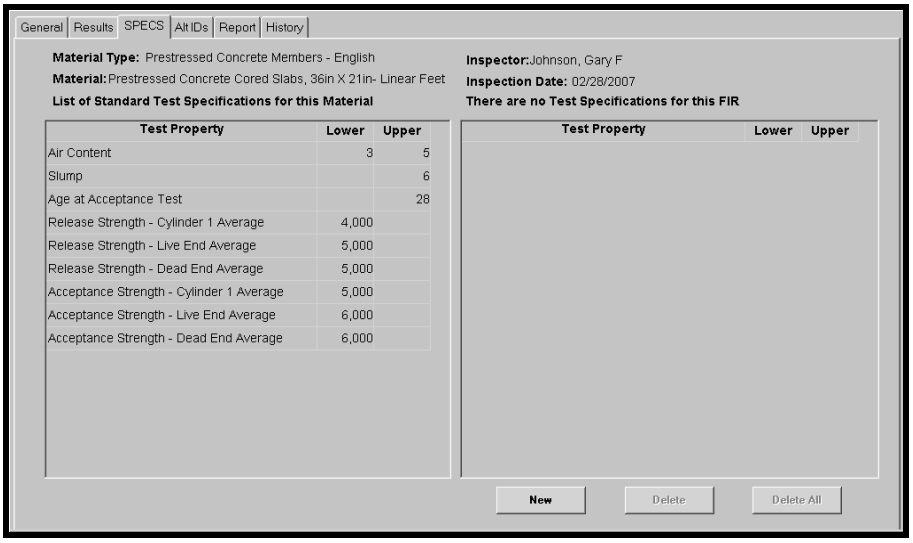

Figure 35 – SPECS tab

Note: *If no value is listed for a particular test property, no limit will be enforced. In the example above, the upper spec limit for Slump is 6, but no lower limit will be enforced. For the Release Strength – Cylinder 1 Average, the lower limit is 4,000, but no upper limit will be enforced.*

Test results entered on the Results tab will be graded using the specifications listed on the SPECS tab. If a test result falls outside the Upper or Lower spec limits, an asterisk will be displayed immediately to the right of the failing test result. In the example above, the lower limit for Air Content is 3. The example below shows an asterisk appearing to the right of the failing Air Content value on the Results tab.

Figure 36 – Failing test result with asterisk

If the material being tested should be graded using specifications *other* than the default specifications, continue

with **Step 41** below. If the standard specifications will be used, skip to **Step 46** to add Alternate IDs.

Step 41: If one or more of the standard specification properties should be overridden for the inspection being entered, or if no standard specification exists, click the **New** button at the bottom of the window. A new row will be inserted on the right under the heading *List of Test Specifications for this FIR*.

Step 42: To select a specification property to override, click in the **Test Property** field and all applicable test properties will be displayed.

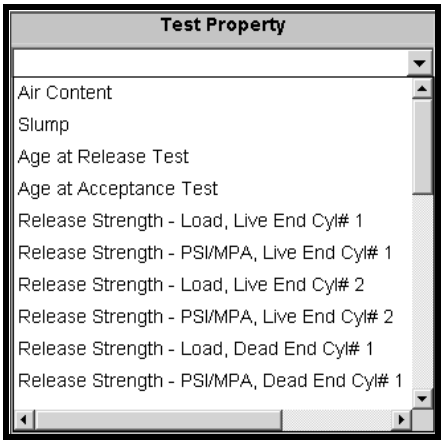

Figure 37 – Test Property dropdown list

Step 43: Enter the lower spec limit for the selected test property in the **Lower** field. If no lower limit should be enforced, leave this field blank.

Step 44: Enter the upper spec limit for the selected test property in the **Upper** field. If no upper limit should be enforced, leave this field blank.

Step 45: Repeat steps 41 through 44 for each test property that should be graded using specifications *other* than the standard specifications.

Below is an example where the Acceptance Strength – Cylinder 1 Average and Slump specifications have been overridden.

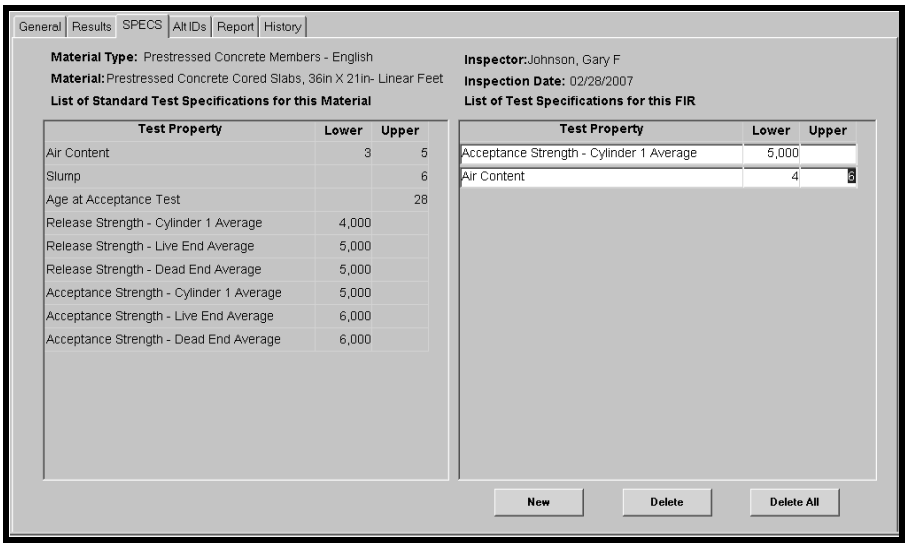

Figure 38 – Individual Test Specifications

In the example above, the Air Content and Acceptance Strength – Cylinder 1 Average values will be graded using the specifications on the right. All other test properties will be graded using the specifications on the left.

Note: *If no specification values exist for a given test property (i.e., in the example above, Age at Release Test has no specification value on either the right or the left), that test property will not be graded.*

Alt IDs Tab - Review Prestressed Concrete

One or more Alternate IDs may be entered for the material being tested. When a new Alternate ID is entered, the Alternate ID Type will default to 'Lot' and the Alternate ID Number will default to the Facility ID followed by a dash and the Inspection Date. An incremental number can then be added to the end of the ID number.

Step 46: To enter an **Alternate ID** row on this window, click the **Insert** button. A data entry row is added as shown below:

Figure 39 - Prestressed Concrete Alt IDs Tab Window

Step 47: To delete an **Alternate ID** row, select the appropriate row; click the **Erase** icon  on the HiCAMS toolbar to delete.

Step 48: To select an **Alternate ID Type**, click the drop-down menu or select from the listed choices.

The type will default to "Lot" when first inserting an Alternate ID in this window. An error message could also appear in the case of entering duplicate Alternate Ids:

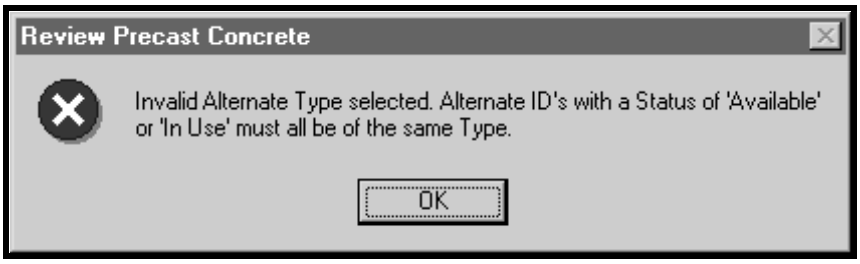

Figure 40 - Error Message for duplicate Alternate IDs

Step 49: To enter an **Alternate ID** number, select the field and enter an appropriate ID number.

Step 50: To change the **Status** from the default of Available, select a listed status as shown in the example below:

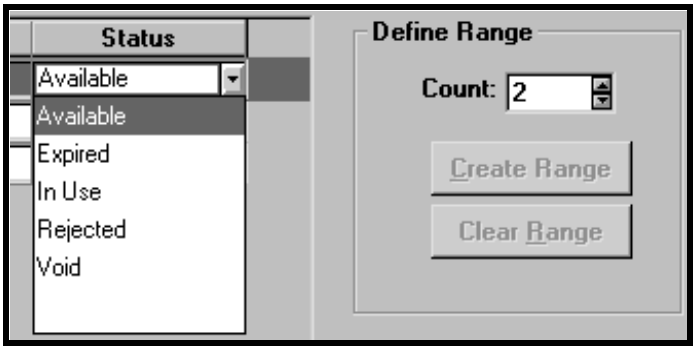

Figure 41 - Prestressed Concrete Status Drop-Down Menu

Step 51: Under the **Define Range** area, the **Create** and **Clear** buttons are available to define or delete a Range for *Alternate Types/Alternate IDs.*

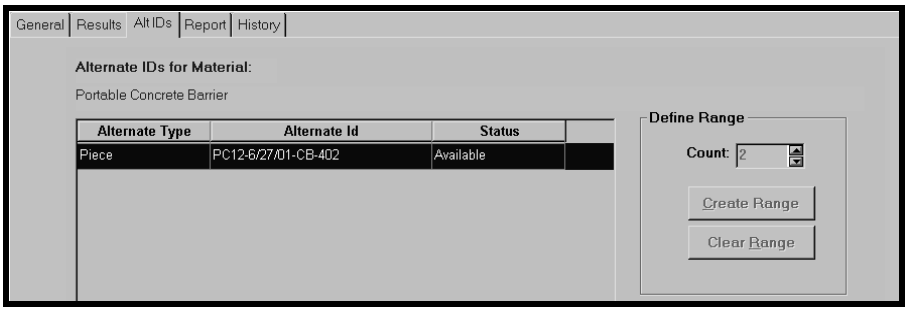

Figure 42 - Entering a Numeric Suffix for a Range

To create a range, click the *Alternate ID* field to the right of the number and add a numeric suffix to start a range to be specified by the count. If a row is not selected when *Creating a Range,* the following error message will be displayed:

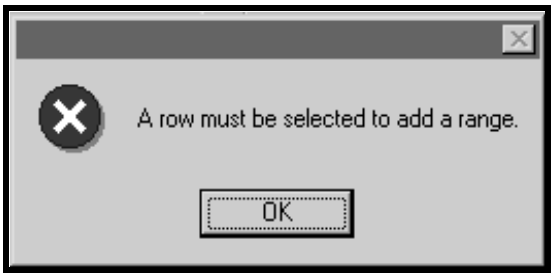

Figure 43 - Error message, Add a Range

Step 52: To specify the **Count** for the range, click the up/down arrows or enter the amount in the field and click the **Create Range** button. The Range is then created as shown in the example below:

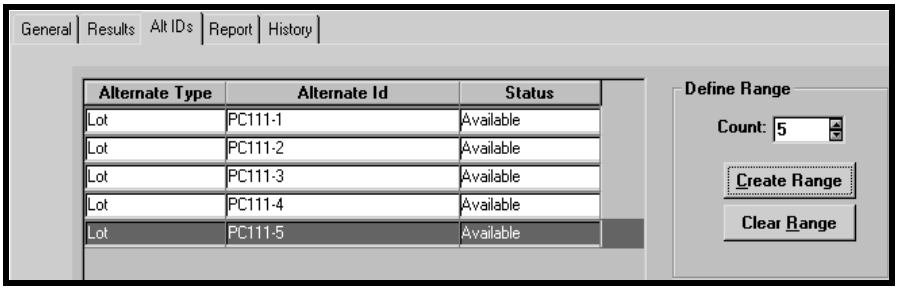

Figure 44 - Prestressed Concrete Create Range

Step 53: To clear the range, click the **Clear Range** button.

Step 54: The Prestressed Concrete Field Inspection Report is now complete and can be saved by clicking the **Save** icon on the HiCAMS toolbar.

Completing the Field Inspection Report

Once all test data has been entered, the Inspection Report can be completed and sent to the Prestressed Concrete Engineer for Authorization. To complete the report, take the following actions.

Step 55: Update the overall inspection result status by clicking in the **Inspection Results** field on the General tab to display a dropdown list of applicable choices.

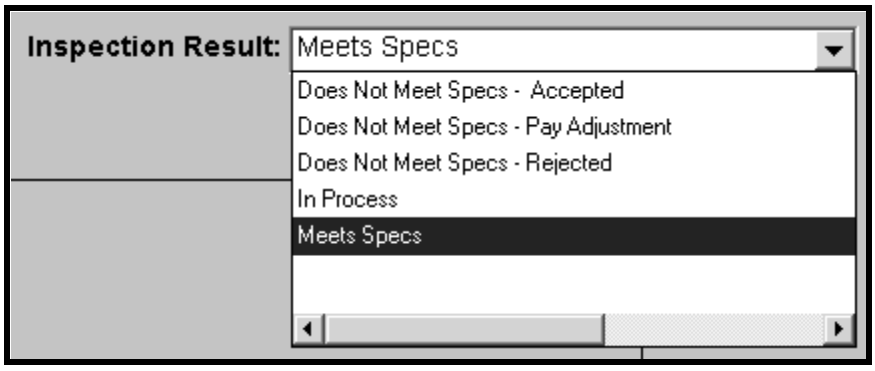

Figure 45 – Inspection Result dropdown list

Step 56: Once an overall inspection result has been set, the report status can be set to *Complete.* To set the report status, click in the **Report Status** field to access a dropdown list of applicable choices.

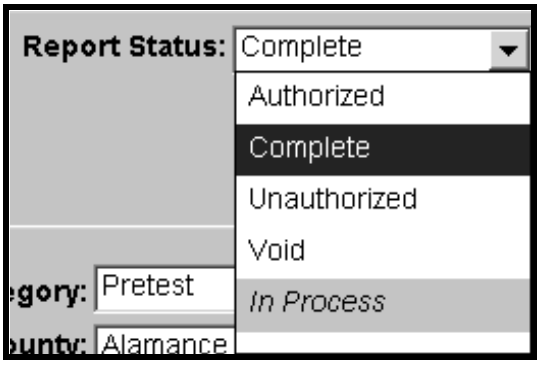

Figure 46 – Report Status dropdown list

Note: *The Report Status cannot be set to complete until all test results have been entered and the Inspection Result has been set to a value other than 'In Process'.*

If the user attempts to set the Report Status to a value other than 'In Process' before choosing an Inspection Result, the following error message will appear:

Figure 47 – Error Message, set Inspection Result

In addition, all inspection result fields must be filled in before the Report Status can be set to complete. If the user attempts to complete the report prior to entering all test results, an error message similar to the following will appear.

Figure 48 – Error Message, incomplete test results

Reports may also be completed in batch via the *Functions* → *Field Inspection Reports* → *Review Field Inspection Reports* window. Following is an example:

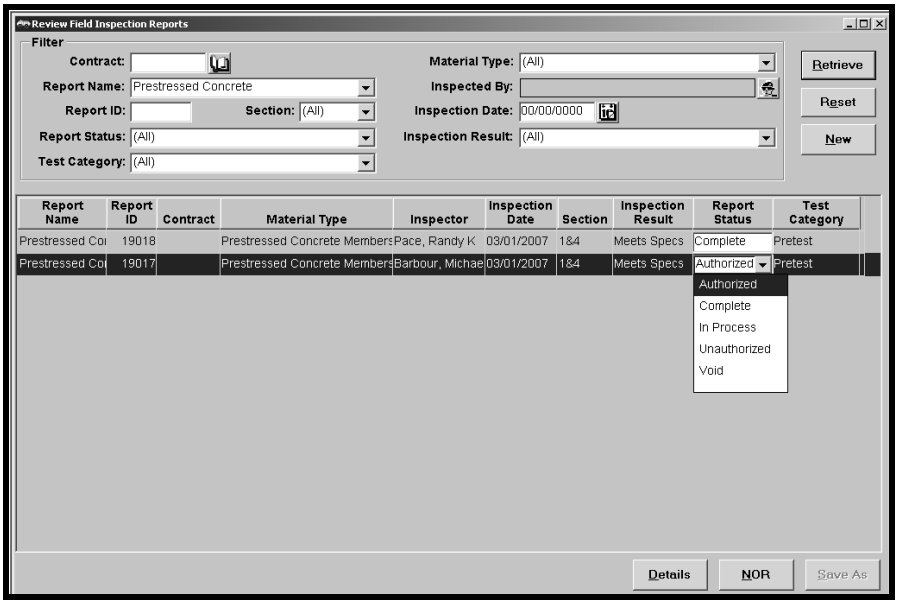

Figure 49 – Review Field Inspection Reports, setting the Report Status

Authorizing the Field Inspection Report

Once a Field Inspection Report has been completed, it must be authorized by the Prestressed Concrete Engineer. Only users with the appropriate security may authorize a Field Inspection Report.

Step 57: To authorize a Prestressed Concrete Field Inspection Report, navigate to the Review Field Inspection Reports window and retrieve all reports in a 'Complete' status. These reports are awaiting authorization. See the example below for filter settings.

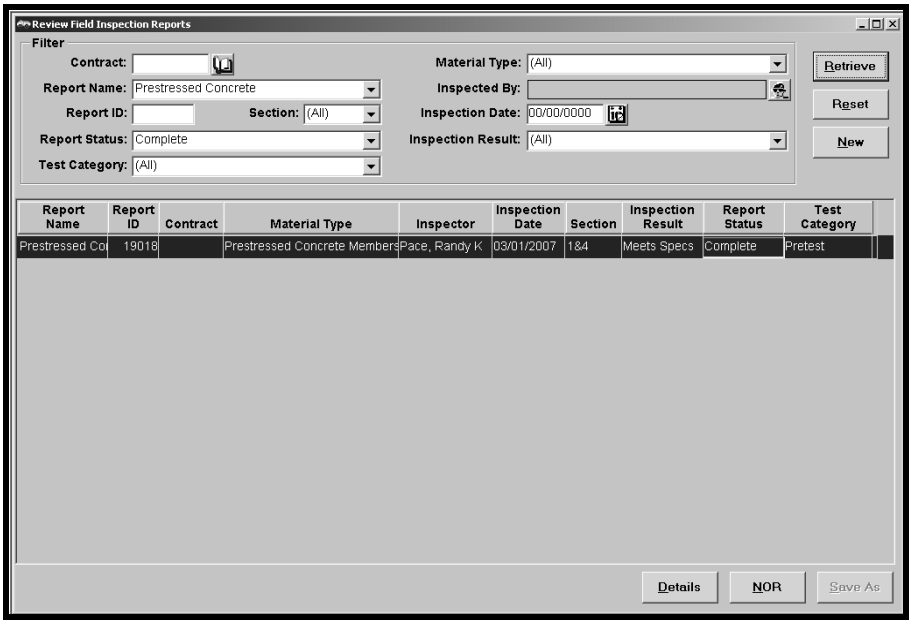

Figure 50 – Review Field Inspection Reports, retrieving reports awaiting authorization

Step 58: To view the details of a report before authorizing it, double click on a Report ID, or single click a report and then click **Details**.

Step 59: Once the report has been reviewed and is ready for authorization, the Report Status can be set to Authorized via the details window (see **Step 56** above).

Step 60: To authorize a report from the Review Field Inspection Reports window, click in the **Report Status** field of the

report to be authorized. A list of available statuses will appear for selection.

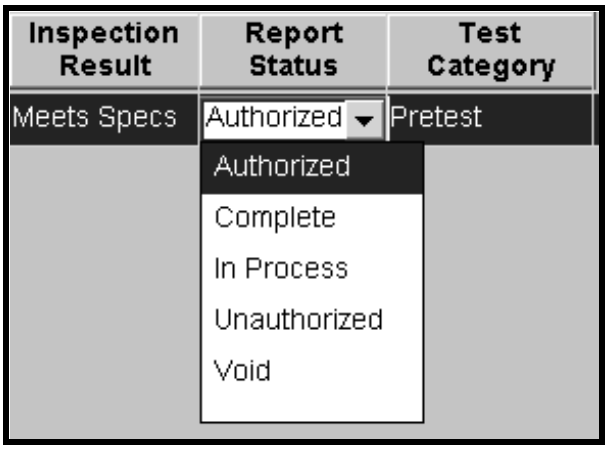

Figure 51 – Report Status dropdown list

When a report is authorized, the application will send a notification to the appropriate personnel informing them of the authorization action. An example notification confirmation is shown below.

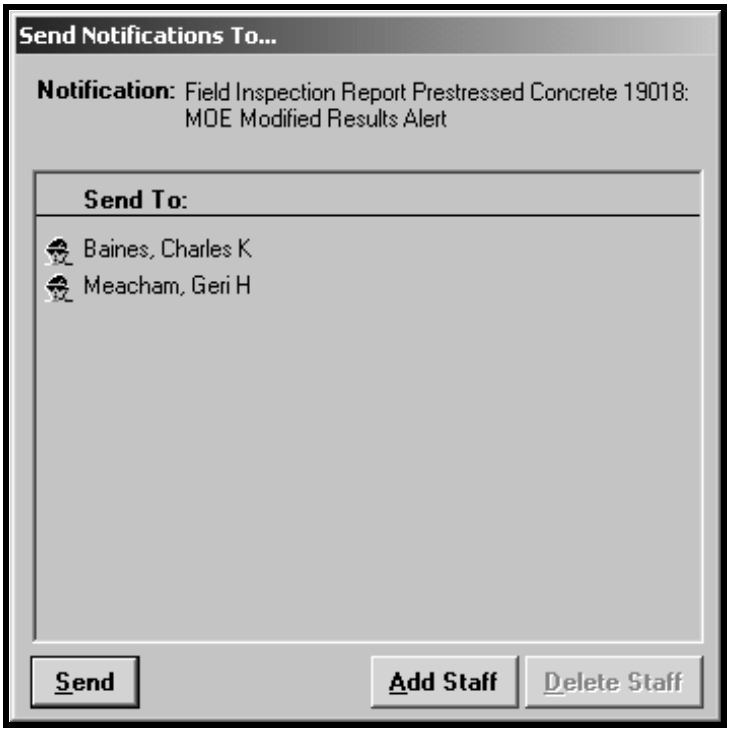

Figure 52 – Notification confirmation

Note: *If the Field Inspection Report is assigned to a specific Contract or a Section has been specified on the General tab, the Inspector, the M&T Records Specialist assigned to that contract, and the Section Materials Specialist assigned to the Division will be notified of the FIR authorization. If the Field Inspection Report is not assigned to a specific contract or section, only the Inspector will be notified of the authorization.*

To add additional staff to the list of people being notified of the report authorization, click the **Add Staff** button at the bottom of the Send Notifications To… popup window.

The staff selection window will be displayed and additional staff members can be selected for notification. Once all appropriate staff members have been selected for notification, click the **Send** button to generate the notifications.

The Prestressed Concrete Field Inspection Report process is now complete. To print a hard copy of the Field Inspection Report, continue with the next section: *Printing Field Inspection Reports.*

Printing Field Inspection Reports

The Prestressed Concrete Report is under the **Report** tab.

Step 61: Click on the Report tab to view the completed Field Inspection Report

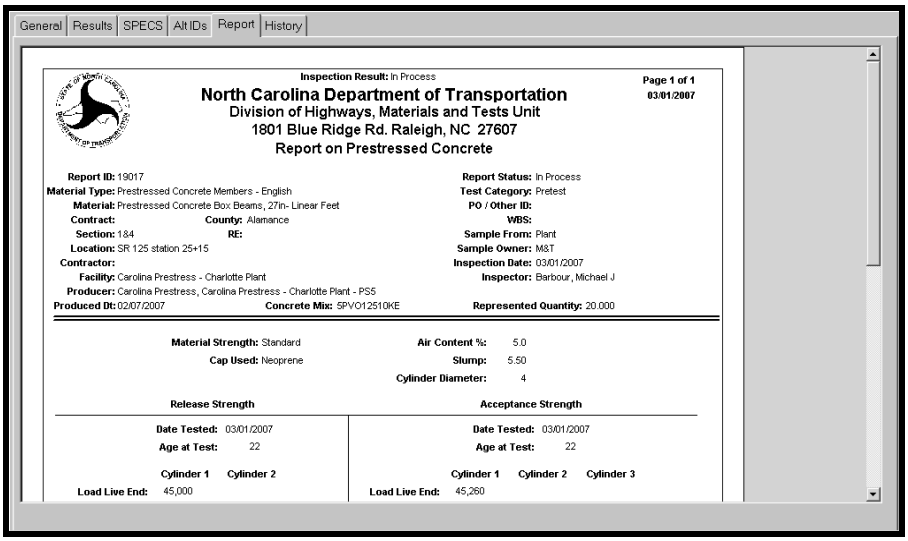

Figure 53 - Prestressed Concrete Report tab

Step 62: To print the report, click the **Print** icon on the toolbar. HiCAMS will generate a printable version of the report. The Report on Prestressed Concrete window will display:

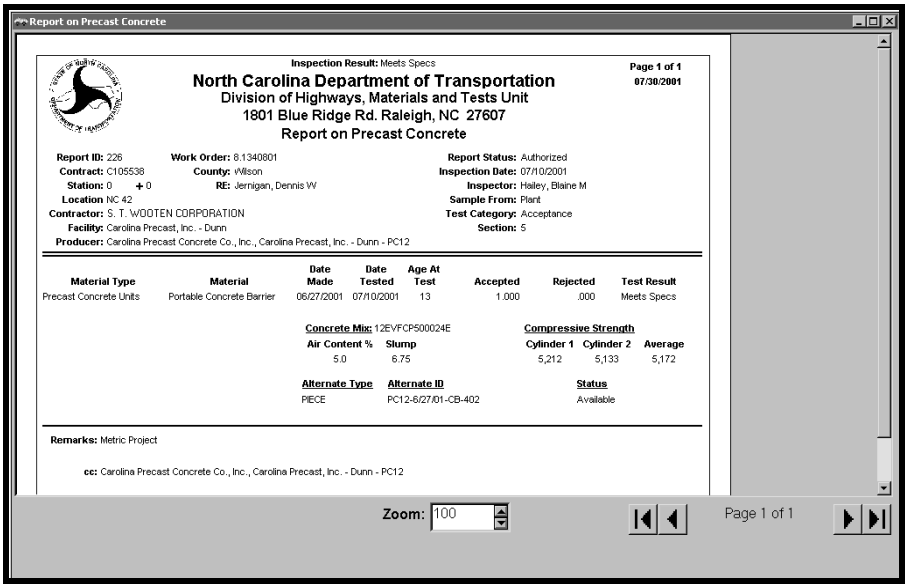

Figure 54 - Report on Prestressed Concrete

Step 3: Click the print icon once again to print the report. The Print setup window will display. Click the **Print** button to print the report:

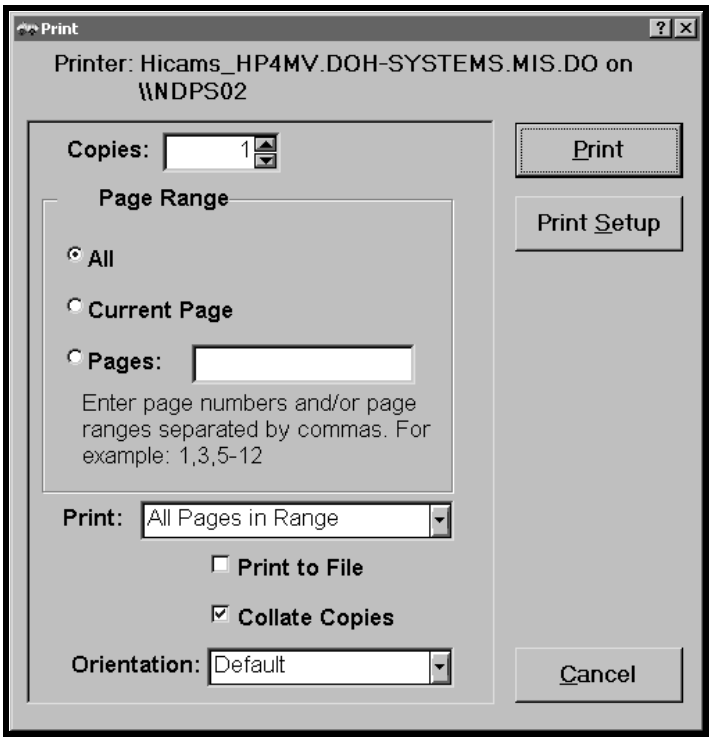

Figure 55 – Print Setup Window

History Tab – Review Prestressed Concrete

Actions that have been performed for an individual report are listed located under the **History** tab. The historical information includes the *Action*, *Action Date/Time*, *Status*, and *Who* performed the action. This area also includes comments that may have been entered during Prestressed Concrete processing. To view the individual comments for each action, click the appropriate row. See example below:

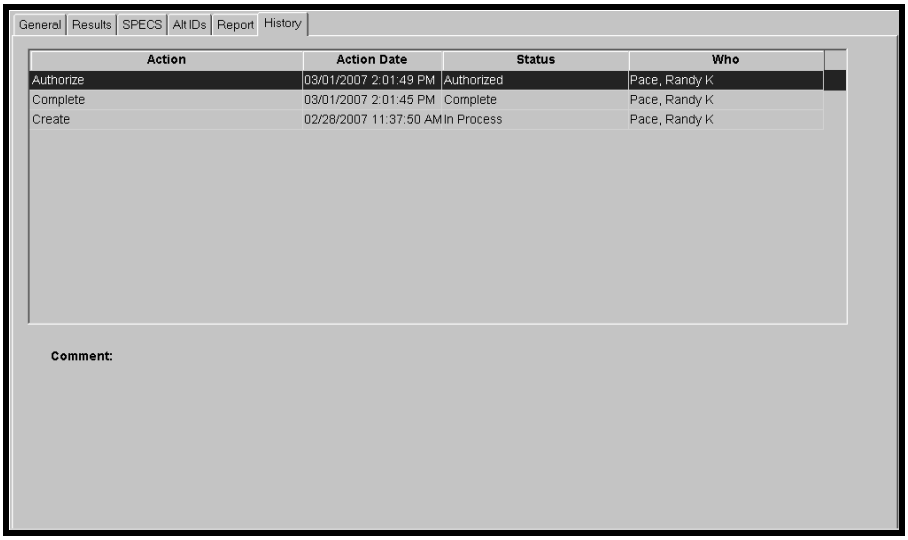

Figure 56 – Prestressed Concrete History Tab